Awareness of Diabetes Mellitus and Associated Factors in Diabetic Patients in Nishtar Hospital Multan: A Cross-Sectional Study

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Abstract

__Background:__ Pakistan ranks seventh among the global top ten countries with the highest number of people with diabetes. The complications found among diabetics include retinopathy in 43%, hypertension in 37%, and foot ulcers in 4%. Access to affordable treatment and counseling about medication and lifestyle including physical activity and dietary practices is critical to manage diabetes and reduce its burden. __Objectives:__ The primary objective of the study was to assess awareness of diabetes among patients with type-2 diabetes in Nishtar hospital Multan. __Methods:__ This study utilized a cross-sectional health facility-based survey approach. A universal sampling technique was used to identify and select 98 diabetes in-patients in Nishtar hospital Multan, Pakistan. A semi-structured questionnaire was used to collect the data. Data analysis involved descriptive statistics using the latest version of SPSS. __Results:__ The main findings revealed that 52% of the study participants in Nishtar Hospital Multan showed adequate awareness of diabetes while the remaining 48% were not adequately aware. There was no significant association between gender, educational qualification, and family history of diabetes with overall awareness of patients about diabetes. However, a statistically significant association was found between the age of study participants and their overall awareness about diabetes. __Conclusion:__ As Pakistan is ranked high burden country with diabetes, so there is an utmost need to look into the constraints of knowledge, attitude, and practices among patients with diabetes to develop future effective health education programs to reduce disease burden and related complications.

Introduction

Diabetes is a chronic, metabolic disease characterized by elevated levels of blood glucose (or blood sugar) that results from either decreased insulin production or decreased sensitivity of body cells against insulin which leads over time to serious damage to the heart, blood vessels, eyes, kidneys and nerves (Uzma Hassan and Khurshid 2018). The most common is type 2 diabetes, usually in adults, which occurs when the body becomes resistant to insulin or doesn't make enough insulin (Shi and Hu 2014, Grol, Halabi *et al.* 1997). In the past three decades, the prevalence of type 2 diabetes has risen dramatically in countries of all income levels. For people living with diabetes, access to affordable treatment, including insulin and counselling about medication and lifestyle including physical activity and dietary practices, is critical to their survival. There is a globally agreed target to halt the rise in diabetes and obesity by 2025(Shera, Jawad *et al.* 2004, Anwer, Shahzad *et al.* 2017).

About 422 million people worldwide have diabetes, the majority living in low- and middle-income countries, and 1.6 million deaths are directly attributed to diabetes each year. Both the number of cases and the prevalence of diabetes have been steadily increasing over the past few decades. The rate of diabetes is more in developing countries (Varma, Bressler *et al.* 2014). Pakistan ranks seventh

among the global top ten countries with the highest number of people with diabetes (Aamir, Ul-Haq *et al.* 2019). According to IDF Diabetes Atlas (2017), the estimated age-adjusted prevalence of diabetes in Pakistan, among individuals aged 20 years or more, was 8.3%; and more than 60% remained undiagnosed (Aamir, Ul-Haq *et al.* 2019). According to Diabetic Association of Pakistan studies, the prevalence of type-2 diabetes in both sexes above the age of 25 years was around 10% (Murray and Lopez 1996).

Diabetes increases risks of dying with cardiovascular diseases (primarily heart diseases and strokes), the chance of limb amputation, kidney failure, and is also responsible for blindness. It exerts a negative pressure in the control of infectious diseases like tuberculosis and HIV (Control and Group 1993). According to Diabetic Association of Pakistan studies, the complications found among diabetics include retinopathy in 43%, hypertension in 37%, and foot ulcers in 4% (Shera, Jawad *et al.* 2004). Moreover, diabetes mellitus affected more than 21 million live births of pregnancy (Farrar 2016).

A cross-sectional survey in seven distinct territories of Peshawar to assess the knowledge and perceptions of diabetes showed imperfect knowledge of diabetes. The mean rates of right reactions to questions concerning three established side effects and given intricacies were 47.1% and 30.8%. Over the top sugar consumption, stoutness, family history, absence of physical exercises, and stress were recognized by 46.3%, 42.3%, 39.3%, 33.4%, and 31.8% of the subjects separately. The nearness of family history and level of training were perceived to be related to more knowledge (Zuhaid, Zahir *et al.* 2012). In another study conducted in Bahawalpur, Pakistan, showed living in the urban, higher socioeconomic status and female gender had higher awareness, whereas lack of awareness was observed among illiterate and poor and rural populations (Zuhaid, Zahir *et al.* 2012, Varma, Bressler *et al.* 2014, Masood, Saleem *et al.* 2016)

For the management of diabetes mellitus patient counseling is very important. It comprises both medication treatment as well lifestyle (i.e. physical exercise and dietary habits). The risks of diabetes can be decreased by legitimate control of blood glucose. The provision of useful and practical information by healthcare providers improves patients understanding regarding disease (Maina, Ndegwa *et al.* 2010).

As Pakistan is ranked high burden country with diabetes, so there is an utmost need to look into the constraints of knowledge, attitude, and practices among patients with diabetes in order to develop future effective health education programs. Therefore, the present study aims to assess disease awareness among patients with diabetes mellitus.

Materials and methods

Study design and settings

This cross-sectional survey was carried out in Nishtar Hospital, Multan. The study population was diabetes patients registered in inpatient wards. The study participants were selected through a universal sampling technique. A total of 98 diabetic patients were interviewed. Verbal approval was obtained from the study participants prior to data collection. Data was collected from March 4th to March 15th, 2019. The data collection instrument was a pre-structured questionnaire

developed from literature review and modified after pilot testing. The questionnaire consisted of two sections: the first section focused on socio-demographic questions (e.g., age, gender, educational qualifications, etc.) and the second section included questions related to general awareness about diabetes.

Data analysis included descriptive statistics using the latest version of SPSS. Overall awareness of participants was estimated by the mean score of specific questions. Study participants who had an overall mean score greater than the cutoff point were "aware" of diabetes and those who had an overall mean score less than the cutoff point were "not aware". Associations were calculated using the chi-square test. *P*-value less than the level of significance (i.e. 0.05) was marked as an indicator for significant association between two categorical variables.

Ethical Approval

Ethical approval of the study was obtained from the Department of Pharmacy Practice, Faculty of Pharmacy, BZU Multan.

Results

From the study participants surveyed (n=98), about 26.5% (n=26) patients were male whereas 73.5% (n=72) were females. Age categories of surveyed patients showed that around 40.8% (n=40) patients were 36 to 45 years old, 28.6% (n=28) patients 56 to 65 years old, 22.4% (n=22) patients 46 to 55 years old, 6.1% (n=6) patients above 65 years old and 2% (n=2) patients 20 to 35 years old. Around 12.2% (n=12) patients were illiterate whereas educational qualification of 63.3% (n=62) patients was matriculation, 14.3% (n=14) patients middle passed, 8.2% (n=8) patients intermediate and 2% (n=2) patients were primary passed. Majority of patients interviewed had family history of diabetes 84.7% (n=83). Descriptive statistics of the study participant's socio demographic characteristics are shown in Table1.

Table 1: Socio-demographic characteristics

Demographic characteristic	N = 98	Percent (%)
Gender		
Male	26	26.5
Female	72	73.5
Age		
20 to 35 Years	2	2.0
36 to 45 Years	40	40.8
46 to 55 Years	22	22.4
56 to 65 Years	28	28.6
Above 65 Years	6	6.1
Educational qualification		
Illiterate	12	12.2
Primary	2	2.0
Middle	14	14.3
Matriculation	62	63.3
Intermediate	8	8.2
Family History of Diabetes		
Yes	83	84.7
No	15	15.3

The explored general knowledge of the surveyed participants about symptoms of diabetes showed that about 80.6% (n=79) patients believed that increased urination is the symptom of diabetes, 11.2% (n=11) patients thought increased tiredness whereas about 8.2% (n=8) patients did not know about any symptoms of diabetes. When asked about the important factors in controlling diabetes, around 85.7% (n=84) patients responded to medication, 12.2% (n=12) responded to physical activity as an important factor in controlling diabetes and related complication whereas 2% (n=2) patients were unaware about any controlling factor for diabetes.

To ascertain the response of study participants with different constructs of their diabetes-related awareness (e.g. medication, diagnosis, diet, physical activity, and exercise), responses in yes and no were utilized (shown in Table 2). The calculated mean score (of all awareness-related questions) was 11.42 with a standard deviation of 1.62. Based on this mean score the study participants were regrouped into two different groups. Study participants who had a mean score of 12 or higher were categorized as being "aware" and with a mean score of 11 or less "not aware" with diabetes. More than half 52% (n=51) of the study participants were aware of diabetes while the remaining 48% (n=47) were not aware of the disease-related awareness constructs.

Table 2: Response to Awareness Constructs

Awareness Constructs	Response (N)		Response (%)	
	Yes	No	Yes	No
Diabetes is a condition in which the body contains a high level of sugar?	98	0	100	0
Diabetic diet consists of special food?	91	7	92.9	7.1
Is medication being more important than diet and exercise in controlling diabetes?	78	20	79.6	20.4
Should Medication be stopped after controlling blood sugar?	58	40	59.2	40.8
Is controlling your weight is important or not?	54	44	55.1	44.9
Do you exercise regularly?	48	50	49	51
Do you know about Hb1Ac?	91	7	92.9	7.1

When the association between the socio-demographic characteristics of the study participants and awareness about diabetes was assessed, it revealed no statistically significant association between gender, educational qualification, and family history of diabetes with overall awareness of patients about diabetes. However, a statistically significant association was found between the age of study participants and their overall awareness about diabetes (p-value 0.000*).

Table 3: Association between socio demographic characteristics and overall Awareness

Variable	P value
Gender	0.808
Age	0.000*
Education	0.673
Family History of Diabetes	0.651

Discussion

The study aimed to assess awareness of diabetes among type-2 diabetes inpatients in Nishtar Hospital, Multan, Pakistan. In this study diabetes was more common in females (73.5%) than in males (26.5%), more than two-thirds (84.7%) of patients had a family history of diabetes, 52% of participants had adequate awareness regarding diabetes mellitus, and significant association was found between the patient awareness with their sociodemographic characteristics (i.e. age).

The overall awareness (52%) of patients in the present study is higher as compared to other studies done in Sudan (15%), Malaysia (41.9%), Kenya (27%), Ethiopia (49%), and India (49.9%).[i] The particular variations elaborate that these studies were done in Sudan, Malaysia and Kenya and India involved the general population whereas the present study involved diabetes inpatients. Finding highlighted in the present studies like patient's overall awareness and an association between sociodemographic characteristics and patient's overall awareness were almost similar to the findings obtained in KAP studies which were conducted in Peshawar and Bahawalpur Pakistan (Zuhaid, Zahir *et al.* 2012, Masood, Saleem *et al.* 2016, Habib and Durrani 2015).

Conclusion

The findings of this study in Nishtar hospital Multan, Pakistan revealed about 52% (n= 51) of the diabetes inpatients shown diabetes-related awareness while 42 (n=47) were not aware of diabetes-related constructs. There was no statistically significant association between socio-demographic characteristics like gender, educational qualification, and family history of patients with their overall disease-related awareness. As Pakistan is ranked high burden country with diabetes, so there is an utmost need to look into the constraints of knowledge, attitude, and practices among patients with diabetes. These findings can support the development of future effective health education programs within the local context to reduce disease burden and related complications.

Conflict of Interest

The authors have no conflict of interest to declare.

Acknowledgment

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